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Project title: “Sustainable and safe food production by novel control strategies of bacteria in the food chain” (SafeFoodCtrl)

The project consortium:



MMRC, Mossakowski Medical Research Centre, PAS (Poland)



Nofima (Norway)



Veso (Norway)

Total cost of the project: 6 908 950 PLN (4 081 550 PLN for MMRC)

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Global demand for food is expected to grow by 70% in the next 30 years, which will require a substantial increase of bacteriologically safe food production. The fulfilment of this demand comes with a huge environmental cost and much of the natural resources shows already signs of degradation or are used unsustainably. Many of pathogenic bacterial strains transmitted in the food chain are antibiotic-resistant and even application of current food preservation technologies does not reduce horizontal transfer of antibiotic resistance genes.

Alternative infection prevention and food preservation methods should be considered, like enzybiotics (antimicrobial enzymes), proposed in this project, which specifically target pathogenic bacteria leaving natural microflora untouched. Moreover, resistance development to enzybiotic is much less probable due to highly conserved bacterial cell wall structures they target. Enzybiotics are considered to be safe for humans and animals (they do not target other cells than pathogenic bacteria) but also safe for the environment (they are biodegradable and non-corrosive).

We propose to apply enzybiotics in: I) primary animal production step (e.g. in salmon aquaculture) to prevent bacterial infections, II) food processing environments as bacterial control agents, III) in food as food preservatives. Such novel approach not only improve animal welfare, quality and safety of food but also reduce environmental cost of extensive food production by minimizing the spread of antibiotics, chemicals and antibiotic resistance genes in the environment. It may subsequently reduce overall food waste generation. Altogether, new technology proposed here will substantially improve sensible exploitation of natural resources by the food industry and be a part of sustainable and safe food production systems for the future.